

SEEPEx.

An Ingersoll Rand Business

YOUR PUMP SOLUTION BEVERAGE INDUSTRY



STATE-OF-THE-ART TECHNOLOGY.

FRUIT AND VEGETABLE PROCESSING

- Includes pumping of:
- Apples
 - Pears
 - Grapes
 - Carrots
 - Potatoes (for spirit production)
 - Cherries
 - Tomatoes
 - Additional flavorings (fermented apple and pear products)

BREWERIES AND DISTILLERIES

- Includes pumping of:
- Spent grain/draff
 - Grain-water mixture (grist)
 - Yeast
 - Hops extract
 - Kieselgur (diatomaceous earth)
 - Trub
 - Additional flavorings

WINE INDUSTRY

- Includes pumping of:
- Sediment
 - Mash
 - Must
 - Pomace
 - Wine

Worldwide there are billions of containers of beverages produced, packaged and transported to millions of consumers, who have full confidence in their quality. Soft drinks, juices, beer, wine and spirits: all create production challenges for the beverage industry.

Technologies that are geared towards efficiency and quality are key. Since 1972, SEEPEX – a leading global specialist in pumping technology with progressive cavity pumps, macerators and control systems – has been rising to each challenge. We offer a superior range of customized solutions, with technically and economically optimized solutions for the beverage industry.

Our modular system consists of a variety of market-specific product groups with high-performance ranges and provides a perfectly tailored pumping solution for each application – whether for fruit and vegetable processing, breweries and distilleries or wineries. Each pump is designed according to the unique requirements of each industry segment, application, production site and medium.

Strict hygienic guidelines ensure high quality products and pumps used throughout all production processes are required to meet increasing demands:

- Gentle pumping
- Cleaning and sterilization in place
- Absolute cleanliness in all processes
- Reliability and ease of maintenance

SEEPEX pump systems take into account the strictest sanitary regulations, ensuring high operational reliability and assurance through ease of maintenance and innovative technologies.

SEEPEX pumps for the beverage industry are certified to meet 3-A Sanitary Standards, USA (Specification 02-10). This organization has established internationally recognized specifications concerning the construction, materials and use of equipment and plant components for the dairy industry.



Depending on the pump range, our sanitary pumps are certified according to 3-A Sanitary Standards (USA) and designed to be in compliance with the EHEDG guidelines.

In addition, SEEPEX actively supports the European Hygienic Engineering & Design Group (EHEDG) whose goals are similar to those of 3-A regarding hygiene-compliant design. Both of these organizations endeavor to develop guidelines and test methods to ensure against contamination. EHEDG, in turn, supports legislation and standardization groups such as CEN and ISO.

Another SEEPEX advantage: A first-class range of services throughout all stages of the pump life. Competent service ensures the optimal operation of SEEPEX pumps over several years. It saves both operating and repair costs for those who utilize it.

The highest quality and hygiene standards, customized pumping systems and economically optimal solutions; this is what SEEPEX offers the beverage industry.



FRUIT AND VEGETABLE JUICE PRODUCTION.

CONVEYED PRODUCT

- Pomace
- Whole fruit
- Vegetables
- Syrup flavors
- Enzymes

KEY SPECIFICATIONS
GENTLE PUMPING
WITHOUT DAMAGE
TO FRUIT PIECES

CHOPPING AND
PUMPING IN AN
ENCLOSED SYSTEM
TO PREVENT
OXIDATION

HYGIENIC PUMPS

COST SAVINGS

- Reduced waste through gentle product handling
- CIP cleaning saves time and money
- Automated systems improve productivity
- Reduced manual handling
- Reduced waste disposal costs

BACKGROUND

Fruit and vegetable juices, as well as purees and smoothies, should taste good and contain the highest amount of vitamins possible. This requires a nutrient-friendly production process for apples, apricots, pears, strawberries, currants, cherries, carrots, tomatoes and other produce. Fermented fruit products, such as cider, share many of the same preparation steps.

TASK

Quality requirements for the end product require sophisticated technology that excludes air from the processing of fruit susceptible to oxidation, while creating a reduced particle size for the next phase of production. Gentle handling of products which may contain fruit pieces is essential to maintain product quality. Throughout this whole process it is imperative to meet the highest standards of cleanliness.

SOLUTION

BTM pumps feature a special concept for chopping and pumping fruits and vegetables. Products are quickly macerated with an integral cutter and then pumped to the subsequent steps with minimal oxygen exposure, via a closed system. Hygienic pumps from product group CS are particularly suited to gently transport smaller whole fruits, such as berries. The optimal design of the two conveying elements, the rotor and stator, transports the fruits without any unacceptable damage. Metering of additives such as enzymes and flavors is done by MD pumps which have accurate linear flow rates.

Where fruits and vegetables are processed, a considerable quantity of waste is normally produced. With the SEEPEX BTM chopper pumps, the volume of waste is reduced by up to 60%. This results in substantial savings on disposal and energy costs.

BENEFITS

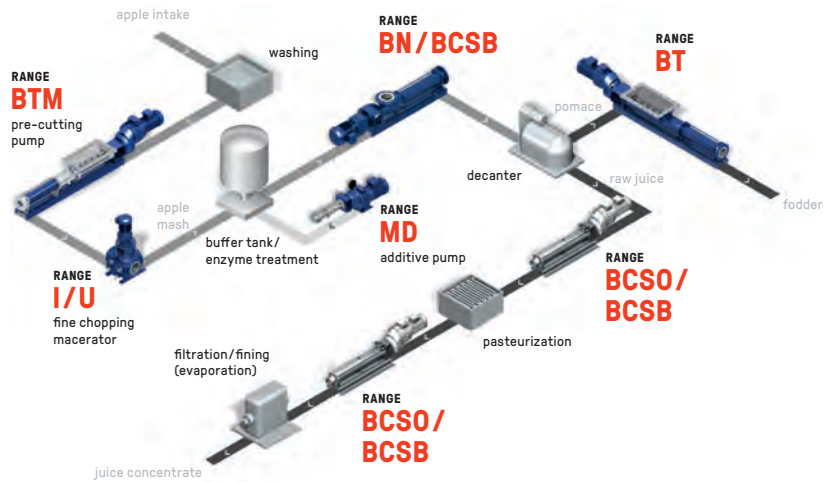
- Gentle pumping of whole fruit
- Chopping and pumping within a closed system with minimum oxygen exposure (BTM range)
- Clean workplace



FRUIT AND VEGETABLE JUICE PRODUCTION FLOW CHART

APPLICATIONS

1. BTM range pumps chop and transport whole apples to the buffer tank
2. Macerators homogenize the product
3. MD range pumps add enzymes to the buffer tank
4. BN/BCSB range pumps transport apple mash from the buffer tank through the heat exchanger and finisher to the enzyme tank
5. BN/BCSB range pumps transport apple mash from the enzyme tank to the decanter
6. BT range pumps transport pomace to the next processing stages



BREWERIES AND DISTILLERIES.

CONVEYED PRODUCT

- Grist and water mix
- Yeast, pitching and waste
- Flavors, colors
- Kieselgur (diatomaceous earth)
- Spent grain, draff, hops and trub

KEY SPECIFICATIONS

RAPID REMOVAL OF GRAIN / DRAFF

GRIST AND WATER MIXING / PUMPING

HYGIENIC, ACCURATE PUMPING

LONG DISTANCE TRANSFER OF GRAIN / DRAFF

COST SAVINGS

- Increased productivity
- Energy costs reduced
- SCT reduces maintenance time

BACKGROUND

Grains and fruit are fermented or distilled to make alcoholic beverages such as beer, high-proof spirits and brandies. Breweries and distilleries can be of any size, from a small craft operation to a large, highly automated process plant.

TASK

The manufacturing process, from mixing of grist and grain with water, through fermentation/distillation to any applicable dosing of flavors, must be carried out under hygienic conditions. Excessive shear forces must be avoided in order not to adversely affect the properties and structure of the natural product. Energy saving during the process along with energy generation from fermentation by-products is a high priority for many businesses.

SOLUTION

SEEPEx pumps from product group T mix grain with water in the feed hopper before the mixture is pumped into the mash tun. Pumps fitted with Smart Conveying Technology can be adjusted to regain efficiency as wear occurs. Pump maintenance is performed without removal of pipework – increasing equipment uptime.

Yeast is handled gently and hygienically using BCSB range pumps to preserve yeast quality for fermentation. Metering pumps add flavors and colors to beers and spirits with minimal pulsation, ensuring accuracy and easy calibration. MD pumps are used to sterilize the incoming water to ensure that no viruses can mutate the yeast, which often defines the unique character of each fermented beverage.

SEEPEx pump technology not only guarantees the highest quality end product, but also optimizes the entire process, which in turn increases the plant's overall efficiency.

BENEFITS

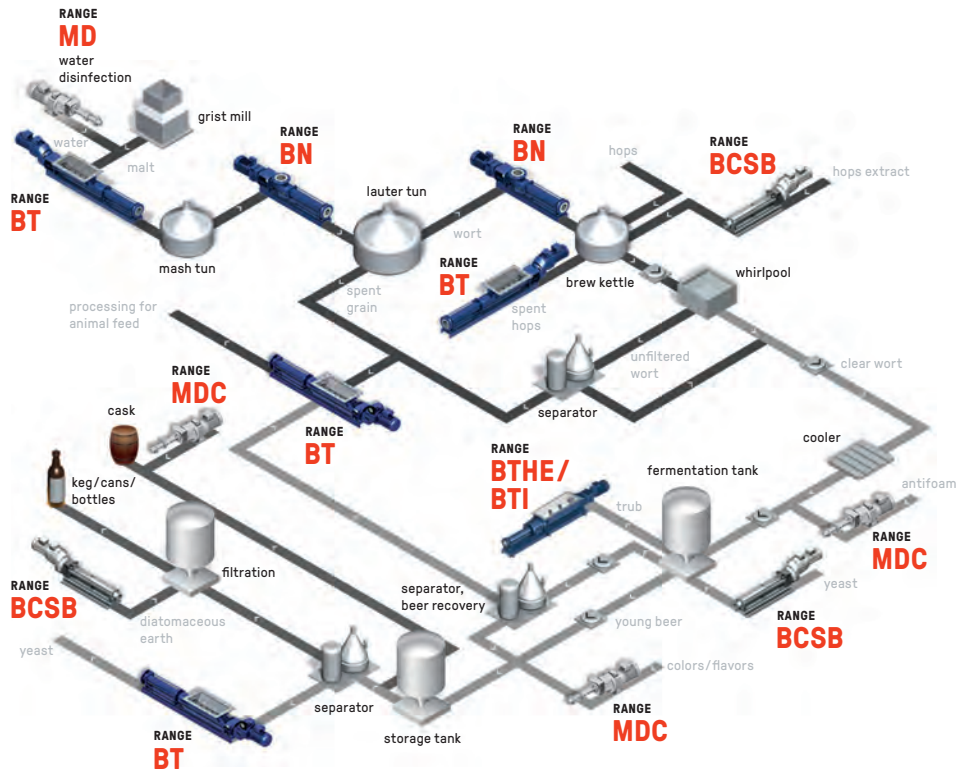
- Increased productivity due to shorter process times
- Improved health and safety, manual handling reduced
- High energy savings compared to blown systems
- Accurate metering for high product quality
- Fewer service intervals and maintenance time reduced with SCT pumps



BREWERIES AND DISTILLERIES FLOW CHART

APPLICATIONS

1. BT range pumps mix grist and water before pumping to the mash tun
2. BN range pumps transfer mash to lauter tun
3. BCSB range pumps transfer hops extract to the mash vessel
4. BT range pumps remove spent grain, spent hops and trub from process vessels
5. BCSB range pumps remove yeast from fermentation vessels and pump to separation equipment
6. BT range pumps transport yeast from the separator
7. MDC range pumps add flavors and colors to brewed products



WINE AND CIDER MAKING.

CONVEYED PRODUCT

- Grapes
- Apples
- Pears

KEY SPECIFICATIONS

REDUCED DAMAGE
TO RAW MATERIALS

COST SAVINGS

- Robust design prevents downtime during harvest
- Highest quality materials resist corrosion and damage
- Food grade (FDA) materials ensure against contamination and product liability claims
- Elimination of a manual transfer process

BACKGROUND

The process of grape fermentation to make wine shares many properties with the process of fruit fermentation to make cider. In both cases, a controlled manufacturing process is as important as the ingredients that are used.

TASK

Gentle product handling, efficiency improvements in the manufacturing process, as well as robust equipment for stationary and mobile applications are among some of the diverse requirements of wine and cider makers.

SOLUTION

The SEEPEX conveying process assures that virtually all berries are brought from the destemmer to the fermentation tanks with minimal damage. The result: Optimal quality of the raw product. However, cider producers often want exactly the opposite – to reduce the size of the raw product. SEEPEX products with EHDEG and 3-A compliant designs offer fitting solutions for both transfer issues.

Our BCSB range pumps have a distinctive compact size, service-friendly block design and proven pin joints. The cavity-free pump housings are simple to clean with virtually no residue, therefore meeting high hygiene requirements.

The SEEPEX BT range has a feed hopper and a feed screw for conveying thin to highly viscous media, including solids such as mash, must, whole grapes, berries, pumace, lees or any other juice-filled media. The length of the hopper opening can be adjusted to suit every application.

The BTM range pump has a feed hopper similar to the BT range, but also integrates cutting knives, which reduce the solids to a slurry for quicker extraction or fermentation. It is a great entry level pump for a cider maker, since the fruit or vegetables used may change frequently. For cider making, this portion of the process is identical to juicing.

BENEFITS

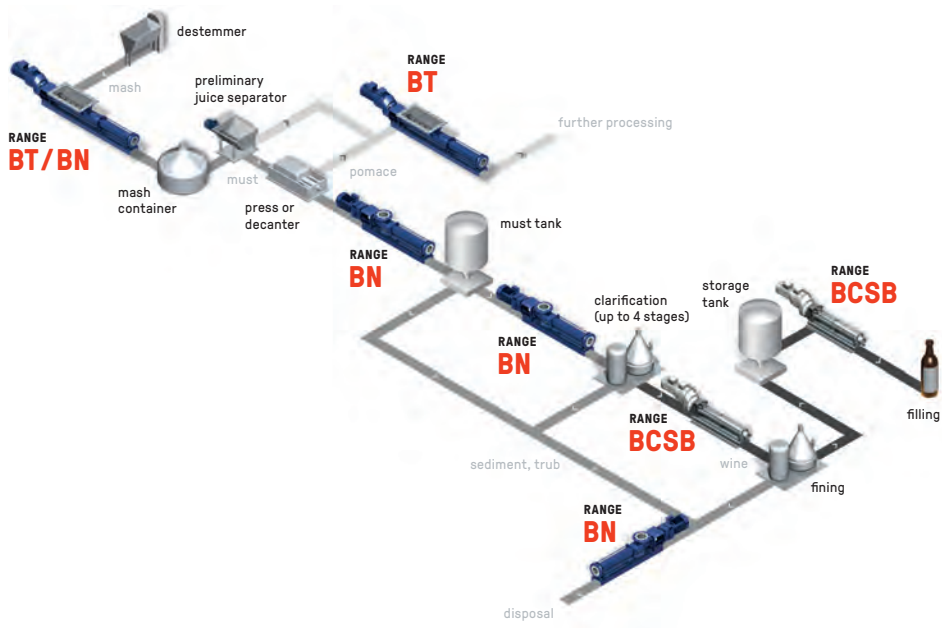
- High quality wine due to gentle product handling
- Compact portable pumps for various uses
- Low maintenance – lower operating speed results in longer service life of the wear components
- Increased efficiency in the manufacturing process



WINE AND CIDER MAKING FLOW CHART

APPLICATIONS

1. BT/BN range pumps transport must from the destemmer to the mash container
2. BT range pumps transport pomace to the next processing stages
3. BN range pumps transport juice from the press to the fermentation tank
4. BN range pumps transport juice to purification
5. BSCB range pumps transport wine from purification to fining
6. BSCB range pumps transport wine from fermentation to storage tanks
7. BN range pumps transport sediment and lees to disposal



METERING AND DOSING.

CONVEYED PRODUCT

- Chemicals for water treatment
- Enzymes
- Colors
- Flavors
- Syrups
- Base product
- Vitamins, minerals, biologicals, enzymes and yeast

KEY SPECIFICATIONS

ACCURATE, LINEAR METERING

MINIMAL PULSATION

LOW FLOW RATES

COST SAVINGS

- Precise metering of expensive ingredients
- Product quality ensured and reject costs reduced
- Energy efficient pumps
- System costs reduced
- Over dosing to ensure minimum dosing levels is avoided
- Fast, in-situ repairs minimize downtime
- Low NPSHr values prevent gas locks

BACKGROUND

Beverage producers face many challenges throughout the production process, which can be divided into three major areas; raw materials handling, production and waste handling. Throughout these processes accurate control of product flow is essential to ensure the final product quality is consistently high.

TASK

It is essential to precisely and consistently meter or dose liquids which affect a change in the end product. The addition of flavors and colors into products must be done accurately to ensure a consistent final product. For continuous processing the main product flow must be constant and additives metered in a constant non-pulsating manner to ensure even distribution.

For water and waste water treatment, chemicals have to be added in small, often variable quantities to ensure cost effective use.

SOLUTION

The output of progressive cavity pumps has minimal pulsation and is directly proportional to the rotational speed of the pumping elements. The linear accuracy, varied using the pump speed, provides easy calibration and control. The ability to meter very low flow rates using pumps from product group D means that colors, flavors and portions will be consistent. Continuous blending of multiple components can be achieved using SEEPEX pumps. Thin to high viscosity, abrasive and sticky products can all be metered accurately.

BENEFITS

- Repeatable, consistent, steady flow
- Minimal pulsation: no pulsation dampeners required
- Sticky, viscous liquids can be handled
- Easy calibration and maintenance
- No flow control or check valves required
- Suction lift possible
- Energy efficient operation
- No vapor locking



FURTHER APPLICATIONS.

Due to their distinctive design and functionality, SEEPEX progressive cavity pumps are successfully used in many other areas of the food industry – such as the milk and dairy, confectionery, bakery and sauces industries.

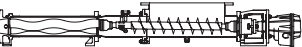
SEEPEX pumps are utilized in not only the production process, but also provide optimal results for the food and beverage industry in waste food handling.

Thanks to the modular design and a wide variety of material combinations, a technically and economically optimized pump can be created to suit every individual application. SEEPEX progressive cavity pumps, macerators and control systems offer the best performance, highest reliability and lowest life cycle costs.

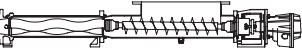


YOUR PUMP SOLUTIONS AT A GLANCE.

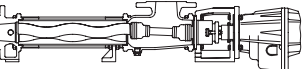
BTM RANGE



BT RANGE



BN RANGE



BCSO/BCSB RANGE



SEEPEX pumps transport thin to highly viscous products with or without solids at low to high temperatures, gently, with minimal pulsation and low shear. They also feature excellent metering accuracy.

BTM range pumps include a chopping system. The knives on the rotating auger in combination with the cutters fastened to the compression housing chop the fed product. The enclosed system permits virtually oxidation-free chopping and subsequent pumping of the medium.

- Conveying capacity: 0.25–130 m³/h (1.1–572 USGPM)
- Pressure: up to 24 bar (350 psi)

BT range pumps feature a rectangular feed hopper with compression zone and auger feed screw. The length of the hopper opening is adapted to the operating conditions. They are used to convey highly viscous products with a low inherent flow rate.

- Conveying capacity: 100 l/h–300 m³/h (0.44–1,320 USGPM)
- Pressure: up to 36 bar (525 psi)

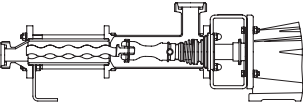
BN range pumps are extremely service-friendly. Since the drive is directly flange-mounted to the pump, no separate pump bearing is required making the pump more compact and less expensive. The plug-in shaft connection between the drive and rotating unit makes replacing the rotating wearing parts and shaft seal easier.

- Conveying capacity: 30 l/h–500 m³/h (0.132–2,200 USGPM)
- Pressure: up to 48 bar (700 psi)

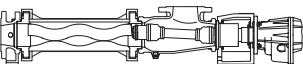
BCSO/BCSB range pumps meet the hygiene demands of the industry while delivering gentle, low shear flow. With no dead spaces, they can be cleaned using CIP and SIP. BCSO pumps are certified according to 3-A Sanitary Standards, USA and designed following EHEDG guidelines.

- Conveying capacity: 30 l/h-130m³/h (0.132-572 USGPM)
- Pressure: up to 24 bar (350 psi)

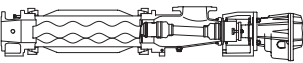
MDC RANGE



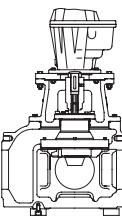
1-STAGE SCT



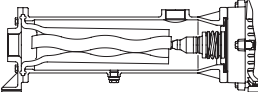
2-STAGE SCT



I RANGE



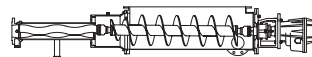
BW RANGE



BTH RANGE



BTVE RANGE



Product group D pumps are available for metering small quantities in all industry sectors. They are used for precise metering of vitamins, yeast, enzymes, colors, flavors, scents, syrup and minerals. The MDC range meets 3-A Sanitary Standards.

- Conveying capacity: 0.06-1,000l/h (0.016-264 USGPH)
- Pressure: up to 24 bar (350 psi)

Smart Conveying Technology (SCT) means faster maintenance as the time to replace the rotor and stator can be reduced by up to 85%. The patented award winning design of SCT enables the stator to be adjusted to suit the application and to adjust for wear - leading to double the lifetime of the rotor and stator. Downtime and life cycle costs are also reduced.

- Conveying capacity: 130 m³/h (572 USGPM)
- Pressure: up to 8 bar (120 psi)

SEEPEX macerators chop solids and fibers in the pumped product to increase the reliability and extend the service life of downstream equipment. They can be integrated into pipelines or supply tanks and connected directly to a SEEPEX pump. They are also available in all stainless steel construction.

- Flow rate: 2-150 m³/h (8.8-660 USGPM)

BW range pumps are portable and versatile. In contrast to conventional progressive cavity pumps, they have only one joint, which saves cost and weight and reduces downtime when replacing spare parts.

- Conveying capacity: up to 10 m³/h (44 USGPM)
- Pressure: up to 4 bar (60 psi)

The BTH range is characterized by a separately driven, concentrically rotating ribbon screw with a maximized diameter and a long pitch length, which easily handles media that tends to bridge. This range is the technical optimum solution for shear-thinning products.

- Conveying capacity: 0.5-130 m³/h (2.2-572 USGPM)
- Pressure: up to 36 bar (525 psi)

BTVE range pumps feature a sliding compression casing with an enlarged cross section to simplify service. A solid auger feed screw with a long pitch, enlarged diameter and increased blade thickness for durability enables longer operating times.

- Conveying capacity: up to 120 m³/h (530 USGPM)
- Pressure: up to 36 bar (525 psi)



SEEPEX GmbH
www.seepex.com